FIELD CROP ABSTRACTS

Volume 27

Prepared by

Commonwealth Bureau of Pastures and Field Crops, Hurley

1974

ISSN 0015-069X

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Published by
Commonwealth Agricultural Bureaux,
Farnham House, Farnham Royal,
SLOUGH SL2 3BN, UK.

Printed by
The Cambrian News Ltd., Queen Street, Aberystwyth, Dyfed, UK

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The Commonwealth Bureau of Pastures and Field Crops is located at the Grassland Research Institute, Hurley, and is one of a group of 10 Bureaux and 4 Institutes which together form the Commonwealth Agricultural Bureaux, an organization financed and administered jointly by the various Commonwealth Governments and Dependent Territories. The Commonwealth Agricultural Bureaux produces 20 abstract journals covering the major branches of agricultural and related sciences. These journals and their subscription rates are listed on the back cover.

The Bureau prepares two monthly journals, *Herbage Abstracts* and *Field Crop Abstracts,* for publication by the Commonwealth Agricultural Bureaux, Farnham Royal, Bucks. These journals contain abstracts of the research findings reported in the world scientific literature on annual field crops, pastures, herbage plants and rangelands and provide both a comprehensive guide to current scientific and technological developments in their subjects and a key to the literature published in the past. In addition to abstracts, the Bureau also issues reviews and monographs on selected subjects.

Scope of Field Crop Abstracts: The subjects covered include the agronomy and major aspects of the biology of all annual field crops grown for food, fodder, oil and fibre, and of tobacco. Land use, farming systems, agricultural meteorology and the control of weeds, pests and diseases are dealt with only in so far as they concern the crop coverage.

The Bureau is prepared, on request, to undertake literature searches and to compile bibliographies on subjects within its scope. A list of bibliographies already compiled is published in this journal.

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NOTES TO READERS

The address given at the end of abstract citations is that of the first author at the time of writing and is normally where the work was carried out.

Transliteration of Cyrillic script is based on the International Standard ISO/R9 1968 (E).

The titles of periodicals and reports conform where possible to those given in the *World List of Scientific Periodicals* (4th Edn; London: Butterworth) and are listed in *Field Crop Abstracts* Vol. 25, No. 1, pp. xix-xlv; they can also be obtained as a separate from the Bureau of Pastures and Field Crops, Hurley, Maidenhead SL6 5LR, price £0.25.

One-side-only copies of *Field Crop Abstracts* are available at £2.00 above the annual subscription rate.

LANGUAGE SYMBOLS

The language symbols used are listed below. An initial capital letter denotes the main language of a paper, a small letter the language of the summary(ies).

Af	Afrikaans	Fi	Finnish	Nl	Dutch, Flemish
Al	Albanian	Fr	French	No	Norwegian
Ar	Arabic	Gr	Greek	Pe	Persian
Be	Belorussian	He	Hebrew	Pl	Polish
Bg	Bulgarian	Hu	Hungarian	Pt	Portuguese
Ch	Chinese	Ia	Interlingua	Ro	Romanian
Cr	Croat	In	Indonesian	Ru	Russian
Cs	Czech	Is	Icelandic	Sh	Serbo-Croat
Da	Danish	It	Italian	Sk	Slovak
De	German	Ja	Japanese	Sn	Slovene
Ee	Estonian	Ko	Korean	Sr	Serbian
En	English	La	Latin	Sv	Swedish
Eo	Esperanto	Li	Lithuanian	Tr	Turkish
Es	Spanish	Lv	Latvian	Uk	Ukrainian
		Ma	Macedonian		

ABBREVIATIONS

The abbreviations used for the names of common units, mathematical operations, chemical elements, etc., are in accordance with British Standard 1991 : 1967. The following additional abbreviations are also used:

a.e.	–	acid equivalent	*FCA*	–	*Field Crop Abstracts*
a.i.	–	active ingredient	*HbA*	–	*Herbage Abstracts*
alt.	–	altitude	LAI	–	leaf-area index
CGR	–	crop growth rate	LAR	–	leaf-area ratio
cv.	–	cultivar(s)	NAR	–	net assimilation rate
DM	–	dry matter	OM	–	organic matter
F . . .s	–	from . . . .summary	RGR	–	relative growth rate
f.y.m.	–	farmyard manure			

ERRATA

(lines are counted from the beginning of the bibliographic data in each item.)

Volume 27

Page	*Abstract*	*Line*	
18	164	7	delete 'de'
18	164	8	for 'Researches Agronomiques' read 'maize hybrids X302,'
20	186	6	insert 'of maize' after 'plants'
45	421	25	for 'applied' read 'singling'
55	511	7	for 'Station, Suceava.' read 'from 6.75 t fibre/ha'
61	572	8	for 'dihyroxyphenolic' read 'dihydroxyphenolic'
63	593	8	insert 'meq/1' after '10'
63	594	5	for '38, 621-635' read '38 (3) 621-635'
65	611	14	insert 'that' before 'these'
79	820	8	insert 'was' after 'UP301'
103	1053	1	for 'Shih-Chi, W.' read 'Wang, S.-C.'
104	1062	1,2	for 'Chung-Shu, L.; Cheng-Te, Y.; Yu-Cheng, L.; Hsin, C.' read 'Lu, C.-S.; Yang, C.-T.; Li, Y.-C.; Ching, H.'
104	1056	3	for '18' read '8'
109	1104	3	for '18' read '8'
119	1199	19	insert 'of' after 'export'
124	1245	3	insert 'varieties' after 'ragi'
130	1301	3	for '18' read '8'
144	1445	4	for '18' read '8'
173	1727	3	for 'Physiologie der Pflanzen' read '*Physiologie der Pflanzen*'
176	1754	10	insert 'N^{+}40 kg' after '80 kg'
178	1781	6,7	for '*Department of Agricultural Chemistry, Kyushu University, Fokuoka, Japan*' read 'Department of Agricultural Chemistry, Kyushu University, Fukuoka, Japan
224	2221	6	for 'Birmingham University' read 'was demonstrated in'
226	2237	14	for 'D^{3t}-hexadecenoic' read 'Δ^{3t}-hexadecanoic'
227	2244	1	for 'Wen-Lian, H.' read 'Huang, W.-L.'
239	2360	6	insert 'of *Nicotiana*' after 'species'
239	2363	10	insert 'kg potassium' after '9b) 106'
249	2513	10	for '(c)' read '(c) were similar. On chernozem soils yields were similar in (a) and (b)'
275	2766	13	insert 'meristematic centre in the inner cortex is thus lost to bacteroid formation, new' after 'initial'
295	2957	9	insert 'are reported' after 'year'
295	2959	9	insert 'K, 0 or 148 kg Na and 0 or 30 t f.y.m./ha, wheat was given 0, 83 or 167 kg' after '167 kg'
336	3232	28	for 'RD1' read 'RD1 by 5'
345	3317	19	insert 'was more' after 'rice'
351	3372	6	insert 'time' after 'normal'
352	3379	26	for 'chlorophyl-a and -b unit' read 'chlorophyll-a and -b/unit'
362	3484	8	for 'tubers,' read 'tubers to form tubers,'
383	3722	1	for 'NUNEZ' read 'NÚÑEZ'
399	3876	6	for 'Salhuana, W.' read 'adapted to conditions'
407	3960	11	for '*m*Ci' read 'μCi'
408	3969	1	for 'Shih-Chang, Y' read 'Yao, S.-C.'
410	3986	18	for 'α'-dipyridyl' read '$\alpha\alpha$'-dipyridyl'
421	4089	13	insert 'with weight loss' after 'correlated'
427	4140	1	for APONTE, G.A.V.' read 'VIDAL A., G.A.'
427	4141	1	for 'LOPEZ, M. DE L.' read 'LEON L., M.'
428	4152	1	for 'ORTIZ, R.G.; HERRERA, J.B.' read 'GIMENEZ O., R.; BERENGENA H., J.'
428	4154	1	for 'COIC,' read 'COIC,'
431	4184	15	for '100' read '100 or 200'
437	4250	11	for 'free' read 'frost-free'
446	4334	7	insert 'Aug. or 4 or 11 Sept.' after '26'
458	4457	2	for '-*Z*' read '-2'
458	4457	7	for '-*Z*' read '-2'
458	4457	9	for '-*Z*' read '-2'
458	4459	7	for 'CaCl' read '$CaCl_2$'

Page	*Abstract*	*Line*	
458	4459	10	for 'CaCl' read '$CaCl_2$'
458	4459	13	for 'CaCl' read '$CaCl_2$'
468	4554	10	for 'NH_4PO_4' read '$(NH_4)H_2PO_4$'
472	4597	13	for 'concentrations' read 'concentrations. Seedling growth was reduced significantly by relatively low concentrations.'
513	5039	3	insert '*Research*' after '*Agricultural*'
513	5041	2	for '*RESEARCH*' read '*Research*'
553	5430	6	insert 'in' after 'out'
560	5491	6	for '-superlita' read '-superelita'
569	5581	16	insert 'and tasselling' after 'pre-tasselling'
570	5589	8	for 'Phillipines' read 'Philippines'
572	5604	3	for '*Institute*.' read '*Institute Annual Report 1971*.'
576	5638	11	for 'treatment' read 'treatments'
579	5669	3	for 'Adas' read 'ADAS'
579	5677	4	for '*genetike*' read '*Genetike*'
580	5678	3	for '**year.**' read '**years.**'
582	5704	11	for 'plant' read 'plants'
583	5708	10	for '[BHC)' read '[BHC]'
585	5729	3	for '*agriculturae*' read '*Agriculturae*'
587	5754	8	for 'Vicia faba' read '*Vicia faba*'
591	5793	16	for 'were' read 'was'
593	5814	11	for '2.5 × 2.5 × 3' read '2.5 × 2.5 and 2.5 × 3'
595	5831	20	for 'lenape' read 'Lenape'
600	6876	4	for '*botany*' read '*Botany*'
608	5950	11	for 'sigle' read 'single'
608	5954	10	for '0.85–1.06' read '0.85–1.06%'
610	5967	5	for 'comprised' read 'comprising'
611	5979	10	insert 'to' after 'compounds'
611	5980	12	for 'analogue' read 'analogues'
614	6010	4	for '*Zeitshchrift*' read '*Zeitschrift*'
614	6012	3	for 'Cesta' read 'Cestas'
630	6166	1	for 'SÁNCHEZ C.M.P.' read 'SÁNCHEZ C., M.P.'
638	6260	16	for '15.1%' read '15.1%;'
639	6268	6	for 'Tatui' read 'Tatui,'
648	6359	3	insert 'Imperial Valley Field Station, El Centro, California, USA.'
660	6489	17	for 'liquid' read 'liquid,'
663	6513	5	for 'Naturwissenschaftliche Abteilung' read '*Naturwissenschaftliche Abteilung*'

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CONTENTS

REVIEW ARTICLE:

Cowpea (*Vigna unguiculata* (L.) Walp.) by R.J. Summerfield, P.A. Huxley and W. Steele ... 301

ABSTRACTS:

CEREALS

Wheat	1	79	103	157	217	249	313	383	445	497	549	617
Oats	11	81	110	165	221	254	324	391	453	503	558	622
Rye	12	81	111	166	222	255	325	392	453	504	559	623
Triticale	12	82	112	–	222	–	–	–	–	–	560	623
Barley	12	82	112	167	222	256	326	393	454	504	560	623
Wild-rice	–	–	–	–	–	–	–	–	–	–	–	–
Maize	15	83	115	169	224	258	330	395	457	506	564	626
Sweet corn	21	–	119	175	226	263	335	–	460	512	570	–
Rice	22	85	120	175	227	263	336	399	460	512	570	630
Sorghum	28	86	123	178	228	268	344	404	465	517	576	635
Pennisetum typhoides	30	87	–	179	228	269	345	405	465	518	578	635
Panicum miliaceum	–	–	124	–	–	269	345	405	–	519	578	–
Panicum miliare	31	–	–	–	–	269	–	–	–	–	–	–
Eleusine coracana	31	–	124	–	228	–	–	–	465	519	578	–
Minor cereals	–	–	124	–	228	–	–	–	–	–	–	–
Cereals, general	31	88	125	179	228	270	346	405	466	519	578	635

LEGUMES

Soyabeans	32	88	125	180	229	271	347	406	467	520	580	637
Groundnuts	35	89	127	183	229	273	349	408	468	522	583	639
Peas	37	89	128	184	230	273	351	409	469	523	584	641
Vicia spp.	38	–	130	188	231	276	354	411	470	524	588	643
Phaseolus spp.	40	–	130	190	231	–	354	412	471	524	–	643
Vigna spp.	43	–	132	–	–	276	356	414	472	526	590	646
Trifolium spp.	–	–	–	–	–	–	–	–	–	–	–	–
Voandzeia subterranea	–	–	–	–	–	–	–	–	–	–	–	–
Cajanus cajan	–	–	–	190	232	277	356	–	–	–	–	646
Cicer arietinum	43	92	132	190	–	–	356	415	473	526	–	647
Lens esculenta	44	92	132	190	–	277	356	415	473	527	591	–
Lupinus spp.	44	–	133	191	–	277	356	415	473	527	591	647
Minor legumes	–	–	133	–	232	–	–	–	474	–	–	–
Legumes, general	45	–	133	191	232	–	357	416	474	527	592	647

ROOT CROPS

Sugar beet	45	92	133	192	232	278	357	416	474	527	592	648
Fodder beet	–	–	135	192	–	280	358	419	476	530	594	649
Turnips and Swedes	47	–	135	193	–	–	–	419	–	530	595	–
Potatoes	47	93	136	193	234	280	358	419	476	530	595	649
Carrots	–	–	–	–	–	–	–	–	–	–	–	–
Sweet potatoes	51	95	139	196	235	283	362	422	–	534	600	652
Cassava	51	–	139	197	–	–	–	422	480	534	600	653
Yams	51	95	139	197	–	283	–	–	480	535	600	653
Cocoyams	51	–	–	197	–	–	–	–	–	–	600	–
Minor root crops	51	–	–	–	–	–	–	–	–	–	–	–
Root crops, general	–	–	–	197	–	–	–	–	–	–	–	653

FIBRE CROPS													
Cotton	52	95	140	197	235	283	363	422	480	535	600	653	
Fibre Flax	54	96	142	200	–	287	365	425	482	536	603	656	
Hemp	54	96	142	200	–	–	365	425	482	536	603	–	
Jute	55	–	142	–	237	287	365	–	483	536	604	–	
Minor fibre crops	55	–	142	–	–	–	–	–	483	–	604	–	
Fibre crops, general	55	–	143	–	–	–	365	–	–	–	–	–	
OILSEED CROPS													
Castor	55	–	143	200	–	287	365	426	483	–	604	656	
Sesame	55	–	143	200	237	–	–	–	483	537	–	656	
Oilseed flax	56	–	143	201	–	288	366	426	483	537	604	657	
Safflower	–	–	144	–	237	288	366	–	483	–	604	–	
Sunflower	56	96	144	201	237	288	366	426	483	537	605	657	
Rape	57	96	–	202	238	288	367	429	485	538	606	657	
Minor oilseed crops	58	–	145	–	238	–	–	–	–	–	606	–	
Oilseed crops, general	59	–	145	–	238	289	–	430	485	–	–	658	
MISCELLANEOUS CROPS													
Tobacco	59	97	145	203	238	289	368	430	485	538	607	659	
Brassica oleracea	62	–	147	206	–	291	–	–	487	540	609	660	
Fodder radish	–	99	–	206	–	291	372	–	–	–	–	–	
Buckwheat	62	99	147	206	240	291	372	431	487	–	609	660	
Other crops	–	–	–	–	–	–	–	–	–	–	–	–	
Miscellaneous crops, general	–	99	147	–	–	291	–	–	–	–	609	–	
GREEN MANURES	62	–	–	–	240	291	372	–	–	–	–	660	
CROP BOTANY													
Physiology	62	99	147	206	240	291	372	432	487	541	609	661	
Chemical composition	64	–	148	208	241	–	373	433	–	542	611	662	
Morphology and anatomy	64	–	148	–	241	292	–	–	–	542	–	662	
Environmental factors	64	–	149	208	241	292	373	433	488	542	611	662	
Nodulation	65	–	–	–	241	–	374	434	–	–	–	663	
Radiobiology	65	–	–	209	–	–	–	434	–	–	–	663	
Taxonomy	–	–	–	209	–	–	–	–	–	542	–	–	
Techniques and apparatus	65	–	149	210	241	293	375	434	489	543	612	663	
Miscellaneous	66	–	150	210	242	–	–	434	489	–	–	663	
WEEDS	–	–	150	–	–	294	–	435	489	–	613	664	
SURVEYS AND LAND USE	66	–	–	210	242	294	–	–	–	543	613	664	
FARMING SYSTEMS	67	100	150	210	242	294	376	435	490	543	613	664	
SOIL AND WATER CONSERVATION	–	–	–	212	243	296	378	436	490	–	614	665	
AGROMETEOROLOGY	69	101	151	212	243	296	378	436	490	544	614	665	
MISCELLANEOUS	–	101	–	212	–	–	–	–	–	–	–	–	
REPORTS	69	101	152	213	243	297	379	437	–	545	614	666	
MEETINGS	71	102	153	213	243	297	380	437	491	545	614	666	
BOOKS	74	102	155	214	247	297	381	441	496	546	615	667	

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